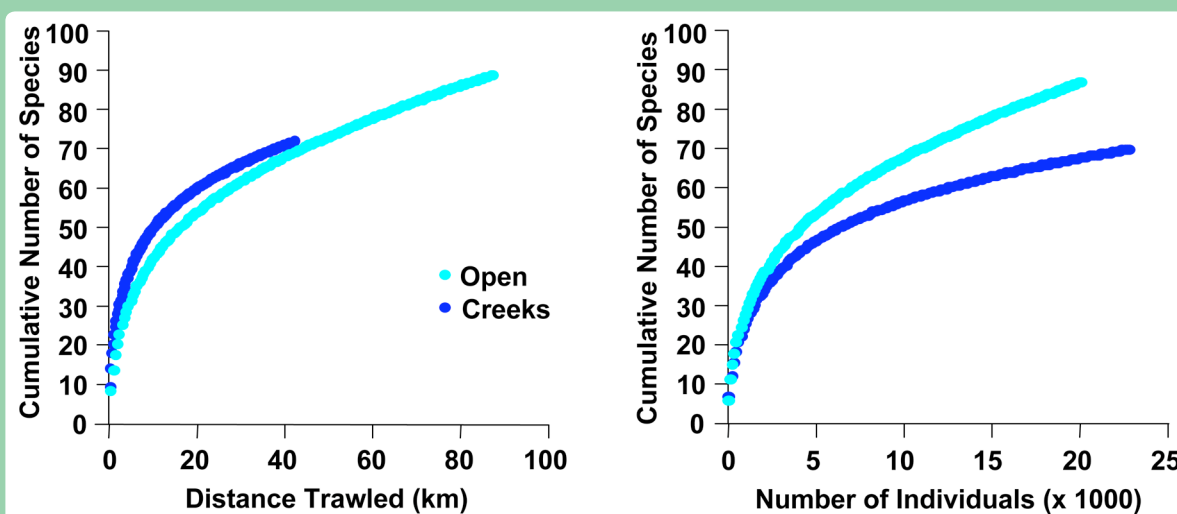


### Box 3.4.3 Large Finfish and Crustacean Biodiversity

#### How many species of large demersal finfish and crustaceans use South Carolina's estuarine environments?

Answering this question requires the application of species-area or species accumulation curves, a technique that examines how rapidly the total number of species captured accumulates as one makes more collections. The graphic below shows the total number of species captured by trawling as a function of the total distance trawled and the total number of individual organisms captured. Notice that because finfish and crustaceans occur at much higher densities in tidal creeks, the number of species caught increases rapidly with trawling effort. However, with further trawling effort, the number of new species caught slows much more than in open water habitats. In open water habitats, the number of new species accumulates more slowly than in tidal creeks at first, but even after having trawled for approximately 90 km, the number of new species is still increasing. By extending these lines out until they become horizontal (to the point at which new species are no longer being captured with additional sampling effort), the total number of species using each habitat can be predicted. Applying this technique, South Carolina's tidal creek habitats are predicted to support approximately 89 large finfish and crustacean species while open water habitat are predicted to support approximately 138.



*Species accumulation curves for all six years of SCECAP monitoring.*

*rhomboides*), spot (*Leiostomus xanthurus*), and Atlantic croaker (*Micropogonias undulatus*). These recreationally and/or commercially important species accounted for 80% of all fish and crustaceans captured. Three of the five most numerically dominant taxa collected in 2003-2004 (*L. setiferus*, *F. aztecus*, *L. xanthurus*) were also among the five dominant taxa collected in both previous survey periods (Van Dolah *et al.*, 2002a, 2004a). In open water habitats, the five most numerically abundant taxa were white shrimp, Atlantic croaker, brown shrimp, spot, and

weakfish (*Cynoscion regalis*), species that comprised approximately 72% of the total abundance of fish and crustaceans in this habitat. In tidal creek habitats, the five most numerically abundant taxa were white shrimp, pinfish, brown shrimp, spot, and brief squid (*Lolliguncula brevis*), species that comprised more than 87% of the total abundance in this habitat. White shrimp, the most abundant species in both open water and tidal creek habitats, were found in significantly greater numbers in tidal creek habitats ( $p = 0.005$ ) than in open water habitats. With the exception of